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Martin G. Linihan

Name

Signature

September 6, 2005

Date of Signature

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re application of: Robert E. Duthie, Jr.

Application No. 09/903,825 Group Art Unit 1744

Filed: June 11, 2001 Examiner: E.L. McKane

For: MICRO-ORGANISM REDUCTION IN LIQUID BY USE OF
A METAL HALIDE ULTRAVIOLET LAMP

BRIEF IN SUPPORT OF APPEAL

Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Herewith is appellant's Brief on Appeal in triplicate together with deposit account authorization for payment of the appeal fee.

REAL PARTY IN INTEREST

Robert E. Duthie, Jr., inventor and owner of the above-identified application and the invention set forth therein, is the real party in interest.

RELATED APPEALS AND INTERFERENCES

There are no pending appeals or interferences related to this application.

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STATUS OF CLAIMS

Applicant hereby appeals the Examiner's Final Rejection dated February 2, 2005 rejecting claims 1-10.

STATUS OF AMENDMENTS

No amendments have been filed subsequent to the Final Rejection of February 2, 2005. The claims in their form as finally rejected by the Examiner are set forth in the attached Appendix.

SUMMARY OF CLAIMED SUBJECT MATTER

Applicant's invention provides an apparatus and method disinfection and pasteurization of fluids employing ultraviolet light. Independent claim 1 is directed toward apparatus for disinfection/pasteurization of fluids. The apparatus comprises:

- (a) a mercury/gallium metal halide ultraviolet lamp enclosed within an ozone free metallic doped quartz envelope (p. 3, lines 26, 27; 10-Fig. 1);
- (b) an ozone free, metallic doped quartz enclosure (p. 3, lines 30, 31; 12-Fig. 1) for the lamp; and
- (c) a vessel containing the lamp and enclosure (p. 4, line 1; 14-Fig. 1) and having an inlet (p. 4, line 1; 16-Fig. 1), an outlet (p. 4, line 3; 20-Fig. 1) and a chamber (p. 4, line 2; 18-Fig. 1) in fluid communication therewith defining a flow path for fluid to be disinfected/pasturized.

Independent claim 7 is directed toward a method disinfection/pasteurization of fluids. The method comprises:

- (a) providing a mercury/gallium metal halide ultraviolet lamp enclosed within an ozone free metallic doped quartz envelope (p. 3, lines 26, 27; 10-Fig. 1);
- (b) providing an ozone free, metallic doped quartz enclosure (p. 3, lines 30, 31; 12-Fig. 1) for the lamp;
- (c) providing a vessel containing the lamp and enclosure (p. 4, line 1; 14-Fig. 1) and having an inlet (p. 4, line 1; 16-Fig. 1), an outlet (p. 4, line 3; 20-Fig. 1) and a chamber (p. 4, line 2; 18-Fig. 1) in fluid communication therewith defining a flow path for fluid to be disinfected/pasturized; and
- (d) operating the lamp to introduce ultraviolet radiation and heat from the lamp into the fluid with the enclosure preventing build up of ozone (p. 4, lines 23-30).

Applicant's invention provides a method and apparatus employing non-thermal pasteurization utilizing technology involving surface sterilization with metal halide ultraviolet lamps. This unique non-thermal method of micro-organism reduction is achieved when a liquid is exposed to a high energy, metal halide, ultraviolet lamp in an enclosed sealed chamber capable of allowing liquid flow into and out of a vessel. The radiation from the lamp will penetrate the liquid reducing the organism. The ozone free, metallic doped quartz enclosure for the lamp allows transmission of ultraviolet light to the liquid without appreciable build up of ozone. The method comprises rapid heat transfer, titanium dioxide penetration and

ultraviolet impregnation of the micro-organism within the liquid.

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-10 are rejected under 35 USC 103 as being unpatentable over Wilson (4,963,750) in view of Duthie, Jr. (5,547,635).

ARGUMENT

The rejection of claims 1-10 under 35 USC 103 based on Wilson in view of Duthie, Jr.

Applicant's claimed method and apparatus is for disinfection/pasteurization of fluids. Contrary to the Examiner's conclusion, Wilson does not disclose an apparatus for disinfection/pasteurization. Wilson discloses only sterilization, and applicant can find no reference to disinfection/pasteurization in the Wilson patent. The difference between sterilization and disinfection is discussed, for example, on page 7, lines 4-19 of the instant application.

Accordingly, since there is a clear difference between sterilization and disinfection as pointed out in the instant application, and since Wilson is concerned only with sterilization, there would be no motivation for one skilled in the art to look to Wilson when addressing a problem in the field of disinfection/pasteurization. Such absence of motivation precludes any obviousness of the combination of Wilson and Duthie, Jr. proposed by the Examiner.

Furthermore, even if the proposed combination of Wilson and Duthie, Jr. were to be made, it would not result in applicant's claimed invention. That is because the proposed combination

would be deficient in applicant's claimed ozone free, metallic doped quartz enclosure for the lamp which is called for in part b) of independent claim 1 and in part b) of independent claim 7. In particular, applicant's invention is characterized by the combination of a mercury/gallium metal halide ultraviolet lamp (10) enclosed within an ozone free, metallic doped quartz envelope and an ozone free, metallic doped quartz enclosure (12) for the lamp. Duthie, Jr. discloses only the lamp which is enclosed within its envelope. This can be confirmed by an inspection of the specification of Duthie, Jr. and of the instant application on page 3 at lines 32-34. In other words, the disclosure of Duthie, Jr. is applicable only to part a) of claim 1 and part a) of claim 7. Wilson does not disclose an ozone free, metallic doped quartz enclosure for a lamp. In fact, Wilson appears to teach against quartz tubes at the top of column 2 of his patent. Instead, the tube employed by Wilson is provided with an outer sleeve of Teflon. Thus, there is no prior art of record which discloses the subject matter of part b) of independent claim 1 and of part b) of independent claim 7.

Accordingly, even if the proposed combination of Wilson and Duthie, Jr. were to be made, it would not result in applicant's claimed invention.

In response to paragraph 5 of the Final Rejection, in view of the fact that the prior art of record does not show part b) of independent claim 1 and part b) of independent claim 7, the Examiner's statement "... the Examiner must take the position that the apparatus of the combination (Wilson in view of Duthie, Jr.), having the same structure as that claimed..." is not supported by the prior art of record.

In view of the foregoing, claims 1-10 are believed to patentably distinguish over Wilson and Duthie, Jr. within the meaning of 35 USC 103.

CONCLUSION

The Board is respectfully requested to reverse the 35 USC 103 rejection of record, for the reasons set forth above, and find that claims 1-10 define patentable subject matter over the art of record.

Respectfully submitted,
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CLAIMS APPENDIX

1. Apparatus for disinfection/pasteurization of fluids comprising:

- (a) a mercury/gallium metal halide ultraviolet lamp enclosed within an ozone free metallic doped quartz envelope;
- (b) an ozone free, metallic doped quartz enclosure for the lamp; and
- (c) a vessel containing the lamp and enclosure and having an inlet, an outlet and a chamber in fluid communication therewith defining a flow path for fluid to be disinfected/pasturized.

2. Apparatus according to claim 1, wherein the lamp is in the form of a tube and the enclosure and the vessel are generally cylindrical in shape, with the lamp, enclosure and vessel being in generally concentric relation.

3. Apparatus according to claim 2, wherein the inlet and outlet are at opposite ends of the vessel.

4. Apparatus according to claim 2, wherein the diameter of the vessel is about twice the diameter of the enclosure and wherein the diameter of the enclosure is about twice the diameter of the lamp.

5. Apparatus according to claim 1, wherein the lamp operates in a wavelength range from about 175 nanometers to about 450 nanometers and at a temperature ranging from about 600 degrees centigrade to about 800 degrees centigrade.

6. Apparatus according to claim 1, wherein the enclosure allows transmission of ultraviolet radiation from the lamp to the fluid without buildup of ozone.

7. A method for disinfection/pasteurization of fluids comprising:

- (a) providing a mercury/gallium metal halide ultraviolet lamp enclosed within an ozone free metallic doped quartz envelope;
- (b) providing an ozone free, metallic doped quartz enclosure for the lamp;
- (c) providing a vessel containing the lamp and enclosure and having an inlet, an outlet and a chamber in fluid communication therewith defining a flow path for fluid to be disinfected/pasturized; and
- (d) operating the lamp to introduce ultraviolet radiation and heat from the lamp into the fluid with the enclosure preventing build up of ozone.

8. The method according to claim 7, wherein the lamp is operated in a wavelength range from about 175 nanometers to about 450 nanometers.

9. The method according to claim 7, wherein the lamp is operated at a temperature ranging from about 600 degrees centigrade to about 800 degrees centigrade.

10. The method according to claim 7, wherein the fluid is a liquid.